

*Supplementary Materials*

# The Growth of *Vallisneria natans* and Its Epiphytic Biofilm in Simulated Nutrient-Rich Flowing Water

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**Table S1.** Nitrogen, phosphorus, COD, pH and ORP in the water of growth zone II at the beginning and end of the experiment.

Experience group	Stage of the experiment	NH <sub>3</sub> -N (mg·L <sup>-1</sup> )	NO <sub>3</sub> <sup>-</sup> -N (mg·L <sup>-1</sup> )	TN (mg·L <sup>-1</sup> )	PO <sub>4</sub> <sup>3-</sup> -P (mg·L <sup>-1</sup> )	COD (mg·L <sup>-1</sup> )	pH	ORP (mV)
Static group	Beginning	12 ± 0.1	0.4 ± 0.1	12.6 ± 0.2	0.2 ± 0.02	50 ± 2	7.3 ± 0.2	120 ± 15
	End	4.2 ± 0.2	3.2 ± 0.1	7.9 ± 0.2	0.1 ± 0.01	10 ± 2	7.5 ± 0.3	67 ± 9
Dynamic group	Beginning	12 ± 0.1	0.5 ± 0.1	12.8 ± 0.2	0.2 ± 0.02	50 ± 3	7.3 ± 0.2	120 ± 15
	End	0.3 ± 0.01	2.1 ± 0.2	3.5 ± 0.2	0.03 ± 0.01	5 ± 0.8	7.8 ± 0.2	140 ± 23

**Table S2.** The growth indices of *V. natans* at the beginning and end of experiment.

Time (d)	Leaf length (cm, FW)		Leaf width (cm, FW)		Root length (cm, FW)		Wet weight (g, FW)	
	Static		Dynamic		Static		Dynamic	
	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic
0d	26.28 ± 2.11	26.42 ± 1.75	0.73 ± 0.10	0.69 ± 0.07	10.27 ± 0.54	11.50 ± 1.22	9.71 ± 3.00	8.76 ± 1.67
60d	31.33 ± 6.95	74.50 ± 6.95	0.59 ± 0.07	0.46 ± 0.03	9.37 ± 0.94	10.88 ± 1.01	6.05 ± 1.94	7.58 ± 1.06

**Table S3.** The physiological and antioxidant defense indices of *V. natans* at the beginning and end of experiment.

Time (d)	Chlorophyll (mg·g <sup>-1</sup> , FW)		Soluble sugar (mg·g <sup>-1</sup> prot)		Total protein (gprot·L <sup>-1</sup> )		Root activity (μg·g <sup>-1</sup> ·h <sup>-1</sup> , FW)		MDA (nmol·g <sup>-1</sup> , DW)		T-SOD (U·mg <sup>-1</sup> prot, DW)	
	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic
	0d	0.56 ± 0.05	0.61 ± 0.04	186.32 ± 38.83	167.80 ± 41.01	0.95 ± 0.45	0.73 ± 0.60	99.50 ± 28.47	95.70 ± 13.99	6.44 ± 0.86	5.14 ± 1.16	6.29 ± 5.34
60d	0.73 ± 0.19	1.08 ± 0.12	206.01 ± 157.92	279.16 ± 174.84	0.91 ± 0.48	0.94 ± 0.16	25.12 ± 10.74	64.96 ± 22.63	15.09 ± 4.31	21.10 ± 5.94	23.26 ± 16.92	28.39 ± 18.48

**Table S4.** Statistic results for table of bacteria diversity indices living on *V. natans* periphytic biofilm.

Sample	Seq num	Out num	Shannon index	ACE index	Chao1 index	Coverage	Simpson
Static	42380	1957.5	5.230311	3250.064	2858.445	0.981471	0.0453745
Dynamic	44892	2132.5	6.192964	3587.353	3075.995	0.979986	0.040283

**Table S5.** Diversity index of algae on the *V. natans* epiphytic biofilm.

Diversity index	Dynamic	Static
Shannon-Wiener	2.61	3.18
Margalef	1.14	2.32
Pielou	0.92	0.88